



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/727,338

12/03/2003

Akisato Kimura

5259-000036

5281

27572 7590 10/28/2008
HARNESSE, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

EXAMINER

ARMSTRONG, ANGELA A

ART UNIT

PAPER NUMBER

2626

MAIL DATE

DELIVERY MODE

10/28/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/727,338	Applicant(s) KIMURA ET AL.	
	Examiner ANGELA A. ARMSTRONG	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 20-51 and 60-67 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 41-43, 49-51 and 65-67 is/are allowed.
- 6) ☒ Claim(s) 1-15, 20-40, 44, 46-48, 60 and 62-64 is/are rejected.
- 7) ☒ Claim(s) 29-31, 34, 37, 45, 61 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed July 9, 2008, in which Applicant has amended claims 1-2, 8-9, 12-13, 20-21, 24, 44, and 60. Currently, claims 1-15, 20-51, and 60-67 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-15 and 20-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. The term "provides a higher possibility" in claims 1, 12, and 20 is a relative term which renders the claim indefinite. The term "higher possibility" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear as to what applicant regards as in the invention with respect to a "higher possibility".

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Art Unit: 2626

4. Claims 24-28, 32-33, 35-36, 38-40, 44, 46-48, 60, and 62-64 are rejected under 35 U.S.C. 102(b) as being unpatentable over Kimura et al, ("Very Quick Audio-Searching: Introducing Global Pruning to the Time-Series Active Search," Proc. of International Conference on Acoustics, Speech and Signal Processing (ICASSP2001), Vol. 3, pp. 1429-1432, Salt Lake City, Utah, USA, May 2001.
5. Kimura discloses a method for quick searching through a long audio stream (a stored signal) to detect and locate a known audio signal (reference signal or query) based on signal similarity.
6. Regarding claim 24, Kimura discloses a signal retrieval method which finds out portions from a database signal which has been registered in advance which are similar to a query signal which is taken as an object, comprising: a query feature extraction step in which a feature is produced from the query signal (Kimura describes feature extraction is a step performed at Figure 2 - "feature vector sequence extracted"); a database feature extraction step in which a window upon which attention is focused is set within the database signal, and in which a feature is produced from the database signal within the window upon which attention is focused (section 2: Time Series Active Search (TAS)); a database feature partitioning step in which a feature sequence which has been produced by repeatedly performing the database feature extraction step while shifting the window upon which attention is focused is partitioned in a time domain ((section 2: Time Series Active Search (TAS) and section 3: Global Pruning in describing that the histograms are created from the stored signal by sliding the window frame by frame and in Figure 2 Kimura illustrates the windows are shifted in the time domain); a database feature pruning step in which a representative feature is extracted from the feature sequence which has

Art Unit: 2626

been obtained after partitioning by the database feature partitioning step, and a representative feature sequence is produced which consists of a smaller number of features ((section 2: Time Series Active Search (TAS) and section 3: Global Pruning); a feature region extraction step in which a region is produced in which a feature which is included in the partition which has been produced by the database feature partitioning step is present ((section 2: Time Series Active Search (TAS) and section 3: Global Pruning); a feature matching step in which a distance is calculated between a feature sequence which has been produced by the query feature extraction step and a representative feature sequence which has been produced by the database feature pruning step ((section 2: Time Series Active Search (TAS) and section 3: Global Pruning); a distance compensation step in which the distance which has been calculated by the feature matching step is compensated using the region which has been produced by the feature region extraction step ((section 2: Time Series Active Search (TAS) and section 3: Global Pruning); and a signal detection decision step in which, by comparing together the distance which has been produced after compensation by the distance compensation step and a search threshold, which is a threshold which corresponds to the distance, it is decided whether or not the query signal is present at the location within the database signal ((section 2: Time Series Active Search (TAS) and section 3: Global Pruning); and wherein the processing of the feature matching step through the signal detection decision step is repeated while shifting the window upon which attention is focused, for some locations within the database signal, the distance from the query signal is calculated, and it is determined whether or not the query signal is present at the locations within the database signal ((section 2: Time Series Active Search (TAS) and section 3: Global Pruning; and section 4: Experiments).

Regarding claim 25, Kimura discloses in the database feature pruning step, any single feature in the partition is taken as a representative feature (section 3.2, clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters).

Regarding claim 26, Kimura discloses in the database feature pruning step, the centroid of the features in the partition is taken as a representative feature (section 3.2, Clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters).

Regarding claim 27, Kimura discloses in the database feature partitioning step, the feature sequence which has been produced by repeatedly performing the processing of the database feature extraction step while shifting the window upon which attention is focused is segmented equally into lengths which have been specified in advance (section 3.2, Clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters).

Regarding claim 28, Kimura discloses in the database feature partitioning step, the feature sequence which has been produced by repeatedly performing the processing of the database feature extraction step while shifting the window upon which attention is focused is segmented so that the region in which a feature is present which is produced by the feature region extraction step becomes smaller than a maximum region which has been specified in advance (section 3.2, Clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters).

Regarding claim 32, Kimura discloses a distance re-calculation step in which, for the location in the database signal at which it has been decided by the signal detection decision step that the query signal is present, the distance between the feature which has been produced by the query feature extraction step and the feature sequence which has been produced by the database

Art Unit: 2626

feature extraction step is calculated (section 3.2, Clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters; section 4, Experiments); and a signal detection re-decision step in which, by comparing together the distance which has been produced by the distance re-calculation step and the search threshold, it is again decided whether or not the query signal is present at the location of the database signal (section 3.2, Clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters and section 4, Experiments), and wherein the processing of the feature matching step, the signal compensation step, the signal detection decision step, the distance re-calculation step, and the signal detection re-decision step is repeated while shifting the window upon which attention is focused, for some locations within the database signal, the distance from the query signal is calculated; and it is determined whether or not the query signal is present at the locations within the database signal (section 3.2, Clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters and section 4, Experiments).

Regarding claim 33, Kimura discloses a database feature classification step in which the respective features which have been produced by repeatedly performing the database feature extraction step while shifting the window upon which attention is focused are classified based upon a distance which has been defined in advance, and a representative feature of the classification is determined upon (section 3.2, Clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters and section 4, Experiments); a selection threshold setting step in which a selection threshold for the distance which has been defined by the database feature classification step is calculated from a search threshold which has been defined in advance (section 3.2, Clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters and section 4, Experiments); and a database feature selection step in which, among the classification

which has been produced by the database feature classification step, a feature is selected which is included in the classification which contains a representative feature such that the distance from the feature which has been produced by the query feature extraction step satisfies a condition which is produced from the selection threshold which has been calculated by the selection threshold setting step (section 3.2, Clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters and section 4, Experiments).

Regarding claims 35-36 and 38, Kimura discloses implementation of Euclid distance (section 3.2, Clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters and section 4, Experiments).

Regarding claim 39, Kimura discloses the query feature extraction step and the database feature extraction step classify the features by a method which is determined in advance, create a histogram which is a frequency distribution table for each classification, and output the histogram as a new feature (section 3.2, Clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters and section 4, Experiments).

Regarding claim 40, Kimura discloses a skip width calculation step in which, based upon the distance which has been calculated by the distance compensation step, a skip width for the window upon which attention is focused is calculated, and the window upon which attention is focused is shifted by the skip width, and wherein the processing of the feature matching step, the distance compensation step, the signal detection decision step, and the skip width calculation step is repeated while shifting the window upon which attention is focused, for some locations within the database signal, the distance from the query signal is calculated, and it is determined whether or not the query signal is present at the locations within the database signal (section 3.2,

Art Unit: 2626

Clustering of Histograms to 3.3, Global Pruning Using the Histogram Clusters and section 4, Experiments).

Regarding claims 44 and 46-48, Kimura discloses a signal retrieval device (section 4, with a description that the search method is performed using a PC) to perform a signal retrieval method similar in scope and content to the signal retrieval method of claims 24-28, 32-33, 35-36, and 38-40 and are therefore rejected under similar rationale.

Regarding claims 60 and 62-64, Kimura discloses a recording medium capable of being read by a computer, upon which is recorded a program for causing a computer of a signal retrieval device which finds out portions from a database signal which has been registered in advance, such that signal retrieval device (section 4, with a description that the search method is performed using a PC, which provides for the computer readable medium as an element of the computer) performs a signal retrieval method similar in scope and content to the signal retrieval method of claims 24-28, 32-33, 35-36, and 38-40 and are therefore rejected under similar rationale.

Allowable Subject Matter

7. Claims 29-31, 34, 37, 45, and 61 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 41-43, 49-51, and 65-67 are allowed.

Response to Arguments

9. Applicant's arguments with respect to claims 1-15 and 20-23 have been considered but are moot in view of the new ground(s) of rejection.

10. Applicant's arguments with respect to claims 24, 44, and 60 have been fully considered but they are not persuasive. Applicant argues Kimura does not disclose the database feature partitioning step partitions a feature sequence in a time domain. The Examiner cannot concur.

At section 3: Global Pruning Kimura discloses the histograms are created from the stored signal by sliding the window frame by frame and in Figure 2 Kimura illustrates the windows are shifted in the time domain, thereby providing adequate support for the database feature partitioning step partitions a feature sequence in a time domain.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 2626

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANGELA A. ARMSTRONG whose telephone number is (571)272-7598. The examiner can normally be reached on Monday-Thursday 11:30-8:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick N. Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Angela A Armstrong/
Primary Examiner, Art Unit 2626